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Date: December 19, 2008 Name: Richard G. Lione, Reg. No. 19,795 Signature: /Richard G. Lione/

Our Case No. 5404/126

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Kenji Okada et al.)
Application No.: 10/561,326) Examiner: Jeffrey S. Lenihan
Filing Date: March 16, 2007) Group Art Unit: 1796
Title: CURING COMPOSITION) Confirmation No. 5641
)

REQUEST FOR RECONSIDERATION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action of September 29, 2008, applicants respectfully request reconsideration of the 35 U.S.C. §103(a) rejections recited there. Preliminarily, however, a summary of the inventions defined by rejected Claims 1-28 is set forth.

The claimed invention relates to a composition capable of producing a cured product having particularly good mechanical properties. The cured product is produced through the control of photopolymerization and thermal polymerization by adding a monoacrylated phenolic antioxidant to a vinyl polymer having a (meth)acryloyl group. The cured product is obtained by adding a controlled amount of "monacrylate phenolic

antioxidant." The photopolymerization reaction of (meth)acryloyl groups can be controlled by adding a specific amount of the "monoacrylate phenolic antioxidant", as described in the Disclosure of the Invention" section of the application specification. The cured products exhibit high breaking elongation as well as high breaking strength, as established in "Examples" described in the application specification.

In contrast to the cured product of the claimed invention, the Nakagawa "999 (WO 99/43719, US 6,964,999) reference describes a vinyl polymer having at least one terminal group of the general formula (1): $-\text{OC(O)C(R)} = \text{CH}_2$ per molecule. The polymer is obtained by living radical polymerization wherein the vinyl polymer comprises a monomeric unit derived from a (meth)acrylic monomer, and wherein Mw/Mn is less than 1.8.

Also in contrast to the cured product of the claimed invention, the Buhno reference (JP 08-003412) relates to a flame-retardant styrene resin composition. The composition comprises (A) a rubber-modified styrene resin, (B) a styrene/conjugated diene block copolymer, (C) a brominated diphenylalkane flame retardant of formula (I), (D) antimony trioxide and (E) a phenolic antioxidant of formula (II).

Further in contrast to the cured product of the claimed invention, the Nakagawa reference '716 (WO 99/65963, US 6,979,716) describes a production method for a branched polymer wherein the method comprises performing living radical polymerization to obtain a macromonomer (T) and polymerizing it. The macromonomer (I) is a vinyl polymer terminally having one polymerizable C=C containing group (- $\text{OC(O)C(R)} = \text{CH}_2$) per molecule and has Mw/Mn of less than 1.8.

As the Examiner recognizes, neither Nakagawa ('999 nor Nakagawa ('716) disclose the use of the monoacrylate phenolic antioxidant. Although Buhno discloses the monoacrylate phenolic antioxidant, Buhno only describes [in 0033] that heat stability, flow stability and good surface of molded material can be obtained by addition of the antioxidant. In other words, Buhno neither discloses nor suggests that the cured product having good mechanical properties such as high breaking elongation and high breaking strength can be obtained by adding the monoacrylate phenolic antioxidant to the vinyl polymer having a (meth)acryloyl group. Therefore, the effects achieved by the present invention are surprising and would not have been contemplated by one skilled in the art at the time of the invention.

In addition, the Examiner mentions in items 8 and 13 in the Office Action that heat-treatment of polymers during processing can cause oxidative degradation, resulting in a decrease in physical/mechanical properties. Thus, the use of antioxidants is known in the art to reduce oxidative degradation in polymers. Therefore, it would have been obvious to one skilled in the art to add the antioxidant disclosed by Buhno to the curable composition of Nakagawa ('999) and Nakagawa ('716), respectively, for the purposes of inhibiting oxidative degradation of the polymer, thereby producing a cured product having improved mechanical properties as compared to heat-cured product prepared from a curable composition that did not contain an antioxidant.

However, there is a description at column 26, lines 2—23 in Nakagawa '999 and at column 26, lines 38-41 in Nakagawa '716 that “the (meth)acrylic polymer is inherently a durable polymer that does not necessarily require addition of an antioxidant but, if desired, the conventional antioxidants and ultraviolet absorbers can be selectively

added." In other words, both Nakagawa '999 and Nakagawa '716 teach that addition of an antioxidant is not required. Therefore, there would be no motivation for one skilled in the art to combine these Nakagawa teachings with Buhno. Moreover, none of the Nakagawa ('999), Nakagawa ('716) or Buhno products disclose or suggest the excellent effects of the present invention in which the cured product having good mechanical properties such as high breaking elongation and high breaking strength can be obtained by adding the monoacrylate phenolic antioxidant to the vinyl polymer having a (meth)acryloyl group.

It should thus be seen that the invention of Claim 1, as well as those of its depending Claims (2-28), would not have reasonably been contemplated by one skilled in the art based on the aforedescribed combination of reference. As such, Claims 1-28 should be allowed.

On a housekeeping note, applicants state (paragraph 1) that a certified copy of the priority document does not appear to be listed in the file wrapper. Applicants submit that such a certified copy was, in fact, submitted in the PCT application filed! Applicants are making a suitable inquiry in that regard.

Respectfully submitted,

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